

**REMARKS**

Claims 26 through 75 are pending in the present application. Claims 1 through 25 were previously canceled. Claims 52 through 75 are newly added by the present amendment.

Applicants note with appreciation, that on page 6 of the Office Action, the Examiner indicated that claims 29, 30, 34 through 36, 38 through 40 and 49 would be allowable if rewritten in independent form. However, Applicants believe that all of the claims are currently in condition for allowance and, therefore, placing the aforementioned claims into independent form does not appear to be necessary.

On page 2 of the Office Action, claims 30, 42, 45, 48 and 49 are objected to because a phrase, "said light source", lacks antecedent basis. Claim 30 is amended to delete the phrase, and also to delete other terms that do not appear to be necessary for patentability. Claims 42 and 48 are amended to properly introduce "a light source", and claim 49 depends from claim 48. Claim 45 did not contain the phrase "said light source", but instead, contained an error with respect to its dependency, which error Applicants corrected. Withdrawal of the objection to claims 30, 42, 45, 48 and 49 is respectfully solicited.

Applicants also amended several other claims, namely claims 31, 41 and 50 to improve their form.

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Also on page 2 of the Office Action, claims 26, 32, 33, 37, 41 - 43, 48, 50 and 51 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,186,632 to Chapman et al. (hereinafter "the Chapman et al. patent"). On page 3 of the Office Action, claim 28 is discussed as part of this rejection, and so, Applicants believe the Examiner intended to include claim 28 in this set of claims. Nevertheless, this set of claims contains one independent claim, namely claim 26. Applicants respectfully

traverse the rejection of claim 26 on the grounds that the Chapman et al. patent does not disclose all of the elements of claim 26.

Claim 26 provides for a collector for guiding light onto a plane. The collector includes, *inter alia*, a first mirror shell for receiving a first ring aperture section of the light and irradiating a first planar ring section of said plane with a first irradiance, and a second mirror shell for receiving a second ring aperture section of the light and irradiating a second planar ring section of the plane with a second irradiance. FIG. 4 shows an exemplary embodiment of such a collector having four shells, namely shells 40, 42, 44 and 46.

The Chapman et al. patent describes a condenser. Page 3 of the Office Action suggests that a re-imaging mirror 608 is descriptive of the first and second mirror shells of claim 26.

With reference to FIG. 6 of the Chapman et al. patent, although the Office Action does not mention reference item 609, Applicants note that item 609 appears to represent a boundary between elements of re-imaging mirror 608. However, as stated at col. 7, lines 4 - 6, “[a]rc 609 represents one of a series of arcs that are formed by the reflected rays 607.” Accordingly, Applicants believe arc 609 represents a pattern of light formed on re-imaging mirror 608 by rays 607.

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The Chapman et al. patent describes several configurations of the re-imaging mirror, for example, a **near normal sphere** (col. 7, line 44) and a **toroid shape** (col. 7, line 48). However, Applicants have not found any suggestion of the re-imaging mirror being configured with first and second mirror shells. Also, with reference to FIG. 7 of the Chapman et al. patent, there is shown a side view of a toroid mirror 706 (col. 7, line 52), which Applicants believe is also representative of a re-imaging mirror, and which is clearly shown as **not being configured with a first and second mirror shell**.

Whereas the Chapman et al. patent expressly describes the re-imaging mirror as being a near normal sphere or as having a toroid shape, and whereas FIG. 7 of the Chapman et al. patent does not show mirror shells, Applicants respectfully submit that the Chapman et al. patent neither discloses nor suggests a first mirror shell and a second mirror shell as recited in claim 26. Hence, the Chapman et al. patent does not anticipate claim 26.

Claims 28, 32, 33, 37, 41 - 43, 48, 50 and 51 depend from claim 26, and thus, are also not anticipated by the Chapman et al. patent. Nevertheless, Applicants wish to further address some issues with respect to several of these dependent claims.

Generally, claims 28, 32, 33, and 41 recite additional features of the first and second mirror shells. Applicants respectfully submit that since the Chapman et al. patent does not disclose the mirror shells of independent claim 26, it does not disclose the additional features of claims 28, 32, 33 and 41.

Claim 28 depends from claim 26 and further recites, *inter alia*, that the first mirror shell is an inner mirror shell and the second mirror shell is an outer mirror shell. The Office Action suggests that this feature and other features of claim 28 are disclosed by re-imaging mirror 608 of the Chapman et al. patent. Applicants are not sure how the Examiner is interpreting the structure of re-imaging mirror 608, but Applicants have not found any disclosure or suggestion of an inner mirror shell and an outer mirror shell, as recited in claim 28.

Claims 32 and 33 depends from claim 26. Claim 32 further recites that the first and second mirror shells are each a ring-shaped segment of an aspherical object. Claim 33 further recites that first and second mirror shells are each a ring-shaped segment of a form selected from the group consisting of an ellipsoid, a paraboloid and a hyperboloid.

Page 3 of the Office Action suggests that the Chapman et al. patent discloses the features of claims 32 and 33 at col. 6, lines 61 - 63, which states:

The actual limiting aperture which forms the pupil may be a semicircular oriented aperture 615 in the transverse plane, or an elliptical oriented aperture 616 in the plane of the ripple plate. Other shapes of apertures may be used to produce pupil fills other than circular.

Referring to FIG. 6, apertures 615 and 616 do not appear to be components of re-imaging mirror 608. More significantly, the passage does not appear to describe re-imaging mirror 608 as having mirror shells. Thus, the passage does not appear to disclose or suggest (a) first and second mirror shells are each a ring-shaped segment of an aspherical object, as recited in claim 32, or (b) that first and second mirror shells are each a ring-shaped segment of a form selected from the group consisting of an ellipsoid, a paraboloid and a hyperboloid, as recited in claim 33.

Claim 37 depends from claim 26 and further recites that first and second ring aperture segments are separated by a gap. Page 3 of the Office Action suggests this feature is disclosed by FIG. 6, re-imaging mirror 608. However, Applicants performed and an electronic search of the Chapman et al. patent, yet did not find any occurrence of the word "gap". Whereas the Chapman et al. patent does not appear to mention a "gap", Applicants respectfully submit that the Chapman et al. patent does not disclose or suggest "first and second ring aperture segments are separated by a gap, as recited in claim 37.

Claim 41 depends from claim 26 and further recites that the first and second mirror shells are two of a plurality of at least three mirror shells. The Office Action also suggests that the Chapman et al. patent's re-imaging mirror 608 discloses this feature. Applicants assert that the Chapman et al. patent does not disclose or suggest first and second mirror shells, much less, that the first and second mirror shells are two of a plurality of at least three mirror shells, as recited in claim 41.

Applicants submit that claim 26 and all claims that depend therefrom are novel over the Chapman et al. patent. Accordingly, Applicants respectfully request reconsideration

and withdrawal of the section 102(e) rejection of claims 26, 28, 32, 33, 37, 41 - 43, 48, 50 and 51.

On page 5 of the Office Action, Claims 27 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Chapman et al. patent in view of U.S. Patent No. 5,369,511 to Amos (hereinafter "the Amos patent"). Applicants respectfully traverse this rejection.

Claim 27 depends from claim 26, and further recites that the first and second mirror shells have dimensions that are different from one another in a direction of an axis of rotation. The Office Action suggests that this feature is suggested by FIG. 20 of the Amos patent.

The Amos patent describes an apparatus for manipulating electromagnetic phenomenon. The apparatus includes a generator 20 of aligned elements 21a - 21f. FIG. 19 is a view of a two-dimensional Fourier Transform (col. 6, lines 8 and 9), and FIG. 20 is a view of a three-dimensional Fourier series approximating the structure of such a generator (col. 6, lines 10 - 12). FIGS. 1 and 4 show generators that approximate the Fourier series geometry of FIGS. 19 and 20 (col. 13, lines 22 and 23). FIG. 7 is an illustration of an embodiment of a system for replaying holograms utilizing the generator of FIGS. 1 and 4 (col. 5, lines 41 - 43).

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The generator of FIGS. 1 and 4 does not perform the same function as the collector of the claims of the present invention. Referring to FIG. 7, at col. 9, lines 13 - 22 the Amos patent states:

In both the truncated pyramid and truncated cone approach, the object and reference beams coincide with the axis 50 instead of being angularly displaced with respect to one another, as is the case with conventional holography. By utilizing the series of nested conical (21) or pyramidal (31) surfaces as illustrated, the **zero-order is sufficiently suppressed** by the time the light arrives at the hologram 43 so as to become a nullity, **eliminating difficulties, such as double-**

**holographic images and blurred holographic images or other aberrations** (emphasis added).

Whereas the Amos patent expressly describes a generator for (a) suppressing the zero order, and (b) eliminating double holographic images and blurred holographic images or other aberrations, Applicants respectfully submit that the Amos patent neither discloses nor suggests the first and second mirror shells of the present claims. More particularly, the generator of the Amos patent does not appear to include a first mirror shell for receiving a first ring aperture section of light and irradiating a first planar ring section of a plane with a first irradiance, and a second mirror shell for receiving a second ring aperture section of the light and irradiating a second planar ring section of the plane with a second irradiance, as recited in claim 26. As claim 27 depends from claim 26, the generator of the Amos patent cannot be applied as disclosing or suggesting first and second mirror shells as recited in claim 27. Thus, the combination of the Chapman et al. and Amos patents, as proposed in the Office Action, does not disclose or suggest first and second mirror shells as recited in claim 27.

Moreover, the condenser in the Chapman et al. patent is for use with a "deep ultraviolet or extreme ultraviolet lithography system" (Abstract), whereas the generator in the Amos patent is for devices such as "on-axis holographic displays, demodulators and optical processor for computers" (Abstract). Applicants have not found a suggestion in either of the two references that would lead one skilled in the art to seek out the other of the references. Accordingly, Applicants respectfully submit that there is **no suggestion or motivation to combine the condenser of the Chapman et al. patent and the generator of the Amos patent**, and as such, the proposed combination of the Chapman et al. and Amos patents cannot be asserted in a section 103(a) rejection of claim 27.

Claim 31 depends from claim 26 and further recites, *inter alia*, that the dimension of the first mirror shell is larger than the dimension of the second mirror shell. Applicants' rationale for support of claim 31 is similar to that in support of claim 27. That is, (a) since the Amos patent does not describe the first and second mirror shells of claim 26, it cannot disclose or suggest mirror shells as recited in claim 31, and therefore,

the combination of the Chapman et al. and Amos patents does not disclose or suggest first and second mirror shells as recited in claim 31, and (b) there is no suggestion or motivation to combine the condenser of the Chapman et al. patent and the generator of the Amos patent, and as such, the proposed combination of the Chapman et al. and Amos patents cannot be asserted in a section 103(a) rejection of claim 31.

Applicants respectfully request reconsideration and withdrawal of the section 103(a) rejection of claims 27 and 31.

On page 5 of the Office Action, claims 44 through 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Chapman et al. patent in view of U.S. Patent No. 6,198,793 to Schultz et al. (hereinafter "the Schultz et al. patent"). Applicants respectfully traverse this rejection.

Claim 44 depends from claim 43, which in turn depends from claim 26. Claim 43 recites an illumination system that includes the collector of claim 26, and claim 44 recites that the illumination system further includes an optical element having raster elements. The Office Action introduces the Schultz et al. patent for its teaching of the use of raster elements.

Applicants explained above, in support of claim 26, that the Chapman et al. patent does not disclose or suggest the mirror shells of claim 26. The Schultz et al. patent does not make up for this deficiency. ~~As such, claim 26 is patentable over the combination of~~ the Chapman et al. and Schultz et al. patents, and so therefore, are all claims that depend from claim 26.

Claim 44, because of its dependence on claim 26, is patentable over the Chapman et al. and Schultz et al. patents.

Claims 45 through 47 depend from claim 44, and thus also depend from claim 26. As such, claims 45 through 47 are also patentable over the Chapman et al. and Schultz et al. patents.

Applicants respectfully request reconsideration and withdrawal of the section 103(a) rejection of claims 44 through 47.

Applicants added claims 52 through 75 to even further provide the claim coverage that the Applicants appear to deserve based on the prior art that was cited by the Examiner. Applicants wish for the Examiner to note that claim 52 includes a recital similar to that of allowable claim 34, and claim 71 includes a recital similar to that of allowable claim 38. A favorable consideration that also results in the allowance of claims 52 through 75 is earnestly solicited.

In view of the foregoing, Applicants respectfully submit that all claims presented in this application patentably distinguish over the prior art. Accordingly, Applicants respectfully request favorable consideration and that this application be passed to allowance.

Respectfully submitted,

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